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VOL. V. SEPTEMBER, 1906. NO. 11

PLANTS OF CALIFORNIA.

BY T. S. BRANDEGEE.

Isomeris arborea Nutt. The type locality of this capparid is San Diego. The original description of its fruit, "capsule an inch or more long and three-fourths of an inch broad," is very nearly the description of an orbicular capsule. Some of the Desert forms have capsules 7 cm. long including the stipe, and 1 cm. wide, and are long-attenuate at each end. The form of the capsule from the type locality is nearly that of *I. globosa*.

Fagonia Californica Benth. The form that grows in the foothills of the western side of the Colorado Desert is frutescent, erect, and the angles of the stems are scabrous, often as much so as those of *F. aspera* from Chili. On the hills of the Desert, east of the Cuyamaca Mountains, grows a form so distinct that it seems almost another species, but it probably can be referred to the variety *Barclayana;* it is prostrate on barren ground, the stems are slightly angled and not frutescent, the leaves and flowers are larger than those of other forms, and the whole plant is thickly beset with amber-colored glands. My specimens from Magdalena Bay, the type locality, have broader leaflets than the California mountain specimens, the stems are hardly frutescent at base and are not scabrous. At San Jose del Cabo the plants are pubescent, and in the adjaceut mountains the form is glabrous, the leaflets are very narrow and the stipules long and slender.

Œnothera cardiophylla Torr. The "Botany of California" gives as the habitat of this species: "Near the Colorado River and eastward in Arizona." It grows in the cañons of Carriso and Split Mountains of the Colorado Desert.

ISSUED SEPTEMBER 15, 1906.

Nemacaulis Nuttallii Benth. This littoral plant is common along the seashore near San Diego. It also grows abundantly on a sand-dune of the Colorado Desert near Carriso Creek. The two forms named by Nuttall *N. denudata* and *N. foliosa*, are well marked at Ocean Beach, San Diego.

Peucephyllum Schottii Gray. This bush has been found north of San Diego County and in northern Lower California, but has not been reported from the intermediate region. I collected it in the cañons af Carriso Mountains, Colorado Desert.

Malperia tenuis Watson. On preceeding pages this species was noted as growing near the boundary line about Signal Mountain. It grows also about Split and Carriso Mountains, many miles north of the Mexican boundary line.

Krynitzkia barbigera Gray, var. **inops.** Stems weak, flexuous, with upwardly appressed pubescence; leaves broadly linear; inflorescence congested into glomerules; calyx-lobes much elongated at maturity, often more than 1 cm. long, densely bearded below the middle; fully mature nutlets elongated, obclavate, with rather large and sharp-pointed muriculations, the groove open from apex to the dilated base.

The type was collected on the Mojave Desert, June, 1884; other specimens not so fully mature are from Inyo, April 16, 1891; San Felipe, April 25, 1899; Keeler, April 14, 1891, and the Needles, Arizona; Dr. E. F. Clark. All in the Brandegee Herbarium.

Allium præcox. *A peninsulare* Jones, Cont. Bot. x. 22, not Lemmon. Five dm. high and less from a bulb 3–4 cm. below the surface of the ground: leaves 2–4 from near the base of the stem, 2 dm. long or less, 4 mm. wide or less: spathe splitting usually into two acuminate segments 2.5 cm. long: umbels 10–20 flowered; pedicels 2–3 cm. long: perianth segments equal in length, 5 mm. long, ovate-acuminate, the inner ones narrower, nearly white, with purple midnerve becoming dull purple: stamens shorter than the perianth, gradually widened to the base; anthers purple: style nearly as long as the filaments, stigma not lobed; capsule crestless: bulb coatings with narrow, linear, horizontally contorted reticulations.

This species has been referred to *A. unifolium*, *A. campanulatum*, *A. serratum* and *A. peninsulare* by different botanists. *A. peninsulare* Lemmon, is a plant common in the foothills distant from the coast, rose-pink in color and appears to be a luxuriant form of *A. serratum*.

A. præcox is common about San Diego, on northern slopes of cañons, especially near the coast, and is a conspicuous part of the early flora of February. It has been distributed in collections from Ensenada; of Cleveland, from San Diego; El Cajon, San Diego County; S. B. Parish, San Bernardino, No. 4667; A. W. Anthony, 187; Santa Cruz Island. T. S. Brandegee: C. F. Baker, 3391. Dr. Watson's description of *Allium hyalinum*, Proc. Am. Acad., xxiv. 87, not *A. hyalinum* Curran, Bull. Cal. Acad. i. 155, seems to have been drawn from the Santa Cruz Island specimens.

Salvia Greatai. Shrubby, branching, the young stems white and tomentose with white branching hairs, 1–1.5 m. high: leaves ovate-lanceolate, tipped with a spine and also spinose-pinnatifid, sessile, 2.5 cm. long, white-tomentose on both faces, especially beneath: flowers in 4–5 seesile, capitate 6–10-flowered clusters near the ends of the branches, surrounded by spinulose-awned, tomentose bracts, the outer bracts broady ovate and spinulose-toothed, the inner becoming linear-lanceolate: calyx tomentose, 1 cm. long, the upper lip tipped with a spine, and near its base are two smaller spines representing lobes; lower lip of two linear-lanceolate lobes 3 mm. long, spinulose-awned: corolla nearly twice as long as the calyx, ochroleucous, slightly and gradually ampliated; upper lip 3 mm. long, with two pointed lobes; lower lip slightly longer, 3-lobed, the middle lobe broadest and longest and irregularly fimbriate: anther of the lower fork of the connective half as long as the upper and polleniferous.

This species has characters both of § *Echinosphace* and § *Pycnosphace*, but is very unlike *S. carduacea* and *S. Columbariæ* of these sections. It was collected by H. M. Hall and L. A. Greata in Cañon Springs wash, about four miles northeast of Dos Palmas, Riverside County, California. No. 5848, H. M. Hall.

Tetracoccus Hallii. A rigidly branched shrub of gray appearance, 2 m. high, the smaller branches often spinescent,

diœcious: leaves nerveless, in fascicles of 3–8 covering the branches, obovate, attenuate at base, sparingly short-hirsute, 4 mm. long, 2–3 mm. wide: staminate flowers 4–5 from the leaf, bearing nodes on pedicels 5 mm. long: petals none; sepals 6, minute, the alternate ones reddish-colored: stamens 4–6, surrounding a central irregularly lobed disk, 2 mm. long: pistillate flowers nearly sessile; petals none; sepals similar to those of the staminate flower; ovary usually 3-celled, cells 2-ovuled; styles 3–4, nearly distinct, recurved; immature capsule pubescent, 7 mm. wide. No mature fruit seen.

Collected by H. M. Hall and L. A. Greata at "Chuckwalla Bench, midway between Cañon Springs and Chuckwalla Spring, Colorado Desert, Riverside County, California. It grows both on the mesa and along a small wash, but was not at all common." No. 5865, H. M. Hall.

The genus *Tetracoccus* has hitherto consisted of a single species, based on specimens collected by Dr. Parry and C. R. Orcutt, near Santo Tomas, northern Lower California. Since then it has been collected by D. Cleveland, eight miles north of Table Mountain, near the U. S. boundary line, and by C. R. Orcutt, near Temecula and the line of Riverside County, California. The new species is very distinct from the original one.

Argithamnia Californica. Annual, monœcious, glabrous throughout, erect, branching, 15 cm. high: leaves ovate-acuminate, attenuate at base into a petiole 5–7 mm. long, serrate, 2–3 cm. long, 10–12 mm. wide: staminate flowers 2–4 in short axillary racemes about as long as the petioles, on pedicels 1 mm. long; bracts linear, white-margined; sepals linear-lanceolate; petals ovate, acuminate, 2.5 mm. long; glands acuminate, 1 mm. long: stamens in two verticels from the column: pistillate flower on a pedicel 1 mm. long: sepals 4–5 mm. long, linear-lanceolate, white-margined, glandular-denticulate; petals acuminate; denticulate; capsule 4 mm. wide; styles united near the base and deeply bifid, not dilated above; seed apiculate, rugose-reticulated.

Collected by H. M. Hall at Marshall Cañon, seven miles west of Coachella; north base of El Toro Mountain, Colorado Desert, Riverside County, California, where it is common. No. 5796, H. M. Hall.

NEW SPECIES OF MEXICAN PLANTS COLLECTED BY DR. C. A. PURPUS.

BY T. S. BRANDEGEE.

Talinaria. *Nov. Gen. Portulacacearum.* Calyx ebracteatus, diphyllus; sepalis æqualibus, carnosis, reticulato-venosis, demum deciduis. Petala 5, hypogyna, libera, oblongo-ovata, exunguiculata, æstivatione imbricata, cito marcescentia. Stamina circa 25, in phalanges 5 petalis oppositas iisque adhærentes disposita; filamenta filiformia; antheræ biloculares. Ovarium uniloculare; stylus columnaris, apice trifidus, lobis oblongis intus stigmatosis. Ovula numerosa, columellæ centrali funiculis gracillimis inserta. Capsula oblongo-ovata, 3-valvis, epicarpio coriaceo, valvarum ab endocarpio chartaceo dissiliente. Semina numerosa, hamoso-reniformia, a latere valde compressa, ala membranacea cincta; embryo curvatus, albumen includens.

Herba carnosa. Flores in pedunculis solitarii. Folia subradicalia.

Talinaria Palmeri. Herbaceous from roots bearing long tubers: leaves spatulate, pointed, 8–9 mm. long, 5–6 mm. wide, crowded upon a short stem so as to appear rosulate, becoming rose-colored, the axils and lower parts bearing numerous white hairs: peduncle usually single, 15–20 mm. high, with 1–2 hyaline, quadrate bracts near the base that are pilose within and from which rarely a second peduncle grows: sepals rose-colored, broadly ovate, 6 mm. long, deciduous at maturity: petals 8 mm. long, 5 mm. wide, rose-colored: stamens and style shorter than the petals: anthers yellow: capsule oblong or ovate at maturity, 7–9 mm. long; epicarp leathery, 3-valved, deciduous from the base; endocarp persistent, reticulate membranaceous, 3-valved, the valves sometimes divided nearly to the base, the sutural nerves separating and resembling slender spines, the strong reticulated nerves also tending to separate: seeds enclosed in a white papyraceous aril that by pressure becomes flattened, and except at the hilum causes them to appear broadly wing-margined; cotyledons incumbent; embryo linear, curved into a half-circle about the albumen; testa smooth.

This plant is related to *Grahamia* of Chile, from which it is distinguished mainly by its bractless flowers, dissilient epicarp and incumbent cotyledons. The winged seeds and other characters are very different from those of *Talinopsis*, which it resembles in the structure of its capsule.

Collected at Saltillo by Dr. Edward Palmer in 1904, and by Dr. C. A. Purpus at Saltillo, and on rocks near Ixmiquilpan in 1905.

Drymaria multiflora. Perennial, growing in clumps from stems rooting at the joints: stems erect, branching, 4 dm. high, striate, glabrous below, and above a portion of each joint glandular-pubescent: leaves broadly ovate to orbicular, mucronate, attenuate at base into a petiole 2–6 mm. long; the blade 6–9 mm. long and wide, glabrous: stipules lanceolate: inflorescence terminal and from the axils of the upper leaves, diffuse, many-flowered: bracts scarious, ovate-acuminate, with green midnerve: pedicels 5–10 mm. long: sepals broadly ovate-acuminate with scarious margins: petals equalling the sepals, bifid nearly to the base into narrow divisions: seeds 4–10, echinate: stamens 5.

From its description, *D. grandiflora* seems to be near this species. Collected near Salto de Aqua, growing on dry hills. No. 1653.

Thelypodium Purpusi. Annual, glabrous throughout, erect, with few branches, 3–5 dm. high: basal leaves oblanceolate, deeply, obtusely, sinuately lobed, 5–7 cm. long, 1 cm. wide, attenuate at base into a petiole; cauline leaves auriculate-clasping, the margins sharply sinuate-toothed or the uppermost entire, long-attenuate to the apex: petals tinged with purple, 5 mm. long, a third longer than the purple, white-margined sepals: stigma circular: silique nearly erect, not stipitate, 6–7 cm. long: pedicels 5–6 mm. long: cotyledons oblique.

Collected on Sierras Pata Galana and Parras, Coahuila, February and March, 1905. No. 1329.

Lepidium monticola. Branching, pubescent stems 4–3 cm. long, numerous from an indurated root: leaves pinnate, the blade 5–7 mm. long and about as wide, sparingly pubescent; pinnæ laciniately lobed; petiole 8–12 mm. long, bearing a few hairs:

racemes numerous, 2–4 cm, long, densely flowered: flowers on pedicels 2–3 mm. long: sepals ovate, less than 1 mm. long: petals shorter, very narrowly linear-spatulate, white: stamens 2, shorter than the petals: capsule 2 mm. long and nearly as wide, slightly winged at apex and minutely notched: cotyledons incumbent.

The specimens are very mature, and most of the leaves have fallen. A few young branches still retain some belated flowers. The plants seem to perish after having matured their fruit and to be winter annuals or biennials. Collected on Popocatepetl, growing in gravelly soil about timber-line. No. 1649.

Cardamine macrocarpa. Annual, glabrous, stems erect, rarely branched, slightly wing-angled, about 1 dm. high: cauline leaves 5–7 cm. and less long, 5–7 foliolate; leaflets oblong, deeply parted into 5–7 mucronate lobes; radical leaves similar, with larger, less deeply parted leaflets: fruiting raceme ⅓ the height of the plant: petals greenish white, 1 mm. wide, 5 mm. long, exceeding the calyx lobes: pods erect, 3–4 cm. long, 1.5 mm. wide, acuminate, slightly stipitate: pedicels 5–8 mm. long; cotyledons accumbent.

Collected on Sierra de Parras, Coahuila, March, 1905. No. 1029.

Lesquerella flexuosa. Stems from an indurated root, branched especially near the base, the lower parts and leaves sparingly pubescent with forked hairs: leaves on petioles 2–6 mm. long, the larger ones ovate or oblong-elliptical, 10–15 mm. long, cuneate at base, entire or sinuate-dentate with one to several short teeth, smaller leaves entire, linear-oblong: flowers numerous along the upper flexuous part of the stems on pedicels 4 mm. long: petals 4 mm. long, spatulate, twice as long as the ovate, white-margined sepals; filaments flattened, narrowed upwards: pod globose, glabrous, with minute stipe and style, 3–4 mm. in diameter; nerve of the septum very indistinct.

Collected on Sierra de Parras, Coahuila. No. 1330.

Cassia fulva. Fruticose, branching; old stems grayish brown; new growth densely brown-tomentose; leaves 5–6 cm. long; petiole 1–2 cm. long, pubescent; leaflets 4–5 pairs on petiolules 1 mm. long, ovate-oblong, rounded at the top, slightly cuneate

at base, white-tomentose beneath, yellowish and silky-hairy above, 12–15 mm. long, 7–10 mm. wide: flowers crowded at the ends of the branches in short, dense clusters; pedicels 5–10 mm. long, densely brown-pubescent; calyx lobes 7 mm. long, brown-pubescent; petals nearly equal in length, 1 cm. long; staminodia 3; perfect stamens 7, anthers slightly hirsute; ovary pubescent; legume flattened, 8–9 cm. long, 12 mm. wide, sparingly hirsute.

This species is marked by the contrast between the white-tomentose lower face of the leaflets and the dark yellow-green of the upper face. Collected at El Riego, near Tehuacan, Puebla. No. 1195.

Cassia Purpusi. A bush 1–2 m. high, the younger growth slightly pubescent: leaflets 1–3 pairs, glabrous, oblong to orbicular, somewhat oblique, 10–18 mm. long, 8–12 mm. wide, nearly sessile, sometimes slightly retuse and apiculate, coriaceous, bearing an elongated gland between the lowest pair: petioles 1 cm. long: stipules linear-setaceous: inflorescence paniculate terminating the main stem and short branches; peduncles 1–2 cm. long; pedicels 5–10 mm. long; buds nodding; flowers erect, 2.5 cm. wide when expanded; sepals oblong 12 mm. long, 3 mm. wide, obtuse at the apex; petals yellow, narrowed to the base into a claw; perfect stamens 7, 3 long and 4 short; ovary pubescent: legume 5 cm. long, 12 mm. wide, glabrous, mucronate, flattened, usually somewhat constricted between the seeds.

Collected near Calmalli, Baja California, by Dr. Purpus, 1898, No. 107, and in fruit by E. A. Goldman at Rosarita, near San Andreas, B. C., Sept. 25, 1905, No. 7160.

Harpalyce ferruginea. Fruticose, the young growth, calyx and leaves, excepting the upper face of the leaflets, ferruginous-pubescent and sprinkled with orange-colored particles; the older growth more or less covered with white lenticels: leaves 3–4 cm. long on petioles 1–2 cm. long; leaflets 2–3 pairs and a terminal one, the midnerve prominent on the lower face, the upper face finely pubescent and darker colored, elliptical or oblong, rounded at both ends, mucronulate: flowers purple, in racemes 2–3 cm. long; pedicels 1–5 mm. long; calyx lobes 2 cm. long; vexillum

18 mm. long and nearly as wide, equalling in length the wings and keel; ovary glabrous.

Height of plant unknown, and no mature legumes accompany the specimens. Collected near Tehuacan Puebla, June, 1905.

Sophora Purpusi. Fruticose, young growth densely white-pubescent, becoming darker with age: leaves crowded, 3–4 cm. long; petioles 5–7 mm. long; rachis tomentose; leaflets coriaceous, 6–9 pairs and a terminal one, ovate-oblong, rounded at both ends, nearly sessile, 6–8 mm. long, 3–4 mm. wide, appressed, white silky-hairy beneath, darker and less hairy above; stipules small, subulate: flowers terminating the branches in a very short raceme, white, purple-tinged or dotted; pedicels 3 mm. long, bearing minute bracteoles close to the calyx; calyx 1 cm. long, campanulate, narrowed at the base about the disk, silky-hairy; the three teeth of the lower part deltoid-acuminate, 1 mm. long, the upper part broad and slightly longer; vexillum broadly obovate, 2 cm. long, exceeding the oblong wings and keel: stamens united ¼ their length: legume 8 cm. long, 1 cm. wide, acuminate, silky-hairy, 2–5 seeded; stipe shorter than the calyx.

The seeds are young, but probably even at maturity the pod would be flattened. Collected on Sierra de Parras, Coahuila, March, 1905.

Halenia Purpusi. Perennial, glabrous; leaves radical, 3-nerved, spatulate, 3–5 cm. long including the long petiole, 5–7 mm. wide, obtuse or acuminate: stems 2–3 dm. high, bearing rarely a pair of short, linear leaves or bracts near the middle and a few setaceous bracts at the inflorescence: flowers 3–4 terminating the stem; pedicels 4–7 mm. long: sepals oblong, acuminate, ⅓ the length of the mature corolla: corolla white, 7 mm. long; spur very short or rudimentary: capsule exserted ⅓ its length and slightly curved near the tip.

The general appearance of this plant is very much like that of *H. plantaginea*, but the flowers are smaller and lack the long spurs. Collected on Ixtaccihuatl, growing in meadows above timber-line. No. 1760.

Marsdenia parvifolia, Frutescent, the slender stems not climbing, slightly pubescent in lines: leaves glabrous. ovate-

oblong, acuminate, cuneate at base, 1–2 cm. long, 4–7 mm. wide; petiole 2 mm. long: flowers on pedicels 2 mm. long, 1–2 from the axils of the leaves: calyx parted nearly to the base into 5 ovate-lanceolate lobes 3 mm. long; corolla campanulate, deeply parted into ligulate lobes that slightly exceed the calyx: scales of the corona distinct, longer than the inflexed tips of the anthers and shorter than the 2-lobed stigma: fruit unknown.

Collected near Tehuacan, Puebla, on rocks. No. 1325.

Gilia (*Collomia*) **lithospermoides.** Many unbranched stems from an indurated root, pubescent: leaves pinnatified with 1–3 pairs of linear, mucronate lobes, gradually changing above into the linear bracts of the inflorescence, alternate, sessile, 10–15 mm. long, tomentose: flowers, 2–3, sessile in the axils of the bracts; calyx teeth acuminate, half as long as the slightly pubescent tube; corolla yellow with purple dots or lines on the lobes, 13 mm. long, 3–4 times the length of the calyx, the tube gradually expanding to the spreading, oblong, 3 mm. long, rounded lobes; stamens unequally inserted on filaments 1 mm. long; anthers not twice as long as wide, sagittate; cells of the ovary 4–5-ovuled.

Collected at Pachuca, Hidalgo, July, 1905, in moist open woods of the mountains.

Citharexylum pauciflorum. Fruticose, branches dark-chestnut color, young growth ash-colored: leaves oblong-ovate, acuminate, long-attenuate to the sessile base, glabrous, punctate especially on the lower surface; inflorescence axillary in 1–3 leaved racemes that are about 5 mm. long, 2-flowered; pedicels 4 mm. long, jointed at the middle: calyx 2 mm. high, truncate, slightly fimbriate; corolla, tubular, dull white, 3 mm. long, pubescent in the throat; lobes oblong, rounded: stamens 4–5: fruit 5 mm. in diameter, red.

A shrub having the appearance of a *Lycium* and near *C. lycioides*, but differing from its description enough to be considered distinct. Collected near Ixmiquilpan, Hidalgo, on mountain slopes. No. 1449.

Holographis (?) **ilicifolia.** Frutescent, intricately branched; stems minutely, retrorsely white-pubrescent: leaves nearly sessile,

coriaceous, orbicular, spinose-toothed, 5–7 mm. in diameter, puberulent: flowers solitary in the axils of the bracts of short spikes: calyx 2-bracteolate, the bacteoles slightly smaller than the 2-mm. long bracts; lobes 5, separated to the base, lanceolate, 7 mm. long, puberulent: corolla bilabiate; upper lip erect, slightly 2-lobed; lower lip 3-parted into broad spreading lobes; ampliated throat as long as the tube, equalling the calyx lobes: stamens 4, inserted at top of tube; sparingly hirsute; anthers, 1-celled, dorsifixed nearly at the base, muticous, linear, pubescent at tips: style filiform, widened at the apex: capsule oblong, 4-seeded; seeds densely covered with white, branched hairs.

This plant is not strictly congeneric with the little known genus *Holographis*, but it seems best to place it there. Collected at Peña, Coahuila, growing on rocks. No. 1327.

Carlowrightia angustifolia. Frutescent, much branched, minutely scabrous in two narrow, vertical lines, striate; upper part, bracts and bracteoles glandular: leaves 2 mm. wide, 1 cm. long or less, linear, acuminate, scabrous on the upper face, margins revolute, ciliate near the base with a few soft hairs: inflorescence spicate or rarely paniculate; corolla purple, 9 mm. long; tube 5 mm. long; lobes oblong, obtuse, about 2 mm. wide; calyx segments ovate-lanceolate, 3 mm. long; bracts shorter, ovate acuminate; anthers subcontiguous, muticous, one cell very slightly lower than the other: capsule 8–9 mm. long: the stipe half its length; seeds 4, white, muriculate.

Collected near Ixmiquilpan, Hidalgo, Aug. 1905. No. 1412. This species is nearest to *C. Pringlei.*

Stenandrium verticillatum. Many stems from a perennial root, about 7 cm. high; stems white-pubescent and also bearing white hairs: leaves in two 4-leaved verticels, terminal and above the middle of the stem, obovate, attenuate into a short petiole, obtuse, entire, 12–15 mm. long, 7–10 mm. wide, bearing on the veins below and on the margins numerous white hairs: inflorescence terminating the stems and axillary in a short spike from the lower verticel; bracts linear-laneeolate, 1–2 mm long, white-hirsute; calyx lobes narrow, 5 mm. long, ciliate with white hairs; corolla rose-colored; the tube about as long as the calyx; the

lobes nearly equal in length, 4 mm. long; the 4 1-celled anthers nearly sessile: capsule oblong, without stipe, 4-seeded.

Collected on the mesa at El Riego, near Tehuacan, Puebla. No. 1238.

Plantago Purpusi. Perennial cæspitose, glabrous: leaves leathery, narrowly ovate, attenuate to an obtuse tip and to a margined petiole, more or less crenate or crenate-dentate, 3–4 mm. wide, 1.5–3 cm. long including the petiole: bract spathaceous entirely enclosing the 4-parted calyx of the solitary flower: corolla tubular, 1 cm. long, twice the length of the calyx, shortly 4-lobed: anthers 4, dorsifixed, much exceeding the corolla, 2-celled, the cells converging to a pointed apex: ovary superior, 2-celled, 6 ovuled, ovules ventrally affixed; stipe of the ovary 2 mm. long, becoming 2 cm. long when in fruit: capsule circumscissile near the middle: seeds brown, somewhat irregularly quadrilateral and flattened, peltate; albumen fleshy; embryo relatively large, oblong-ovate, the radical short.

This interesting plantain belongs to the § *Plantaginella* and is related to the one-flowered Andean species of South America. Collected in wet meadows along brooks and glaciers on Ixtaccihuatl. No. 1840.

Houstonia gracilis. Herbaceous, perennial by filiform rootstocks; stems erect, 15–20 cm. high, sparingly branched, glabrous: lower leaves ovate, about 6 mm. long, 5 mm. wide and less; upper leaves linear-oblanceate, mucronate, inclined to be revolute, slightly pubescent; stipules minute, setiform: inflorescence terminating the stems or axillary in few flowered cymes; peduncles 5–8 mm. long; pedicels 3–5 mm. long; calyx divisions 1 mm. long, lanceolate; corolla funnel form, 4 mm. long; tube pubescent within; capsule subdidymous, broader than long, narrowed below, 1.5 mm. long, four-fifths inferior; seeds nearly flat, minutely scrobiculate.

Possibly this is the *H. cærulea* of Biolog. Cent. Am. from the same region. Collected near Orizaba, growing on rocks. No. 1251.

Flourensia ilicifolia. Shrubby, 1.5 m. high, the brown puberulent stems branched: leaves alternate, glabrous, ovate, spin-

ulose-dentate, thick in texture, with stout midnerve, 2 cm. long, 1 cm. wide, cuneate into a petiole 3–6 mm. long: heads 1.5 cm. high, terminating the branches, eradiate: involucral scales in 3–4 rows, thick, linear-oblong, 6 mm. long, 2 mm. wide, obtuse, puberulent, the lower ones bract-like upon the peduncle: outer paleæ of the receptacle resembling the involucre, indistinctly striate; inner paleæ scarious and bifid at apex: corolla tube short: marginal akenes triquetrous; disk akenes flattened, all white-villous with long hairs: pappus two persistent stout scales widened to the base, with or without a small intermediate awn.

Collected near Parras, Coahuila. No. 1150.

Bidens alpina. Annual, the few spreading stems sparingly hirsute-pubescent, 2–6 cm. long: leaves pinnate, the blade 1 cm. long or less and of greater width; pinnæ 1–2 pairs, incised or entire, glabrous: petioles 5–15 mm. long: heads on pubescent peduncles 2–3 cm. long, 5 mm. high and 8 mm. wide including the short quadrate, yellow ray: involucre double, the outer of five linear, slightly spatulate bracts, ciliate; bracts of the inner involucre ovate-lanceolate: akenes 7 mm. long, nearly smooth; awns none or two varying from 1 mm. long to rudiments, corneous and not barbellate.

This is a small species with short stems nearly prostrate and rather inconspicuous flowers. Collected on Popocatepetl, growing in gravelly soil above timber-line. No. 1684.

Achænipodium. *Nov. Gen.* Capitula discoidea. Involucrum campanulatum, bracteis 2–3-seriatis angustis herbaceis, exterioribus brevioribus. Receptaculum convexum bracteis complicatis flores amplectentibus onustum. Corollæ tubulosæ, limbo cylindraceo apice 5-fid. Antheræ basi auriculis minutis sagittatæ. Styli rami obtusi breviter appendiculati. Achænia a latere compressa, margine ciliata, basi in stipitem contracta. Pappi aristæ 2 setiformes, squamellis intermediis 0. Frutex? Folia opposita, petiolata, serrata. Capitula in paniculam carymbosam disposita. Corollæ flavæ.

Achænia stipitata iis *Podachænii* simillima.

Achænipodium discoideum. Stems erect, striate, hirsute pubescent: leaves lanceolate, long-acuminate, 10–14 cm. long, 2–3

cm. wide, serrate with salient teeth, pinnately veined, the light-colored midnerve large and prominent, lighter-colored and hirsute-pubescent below, pubescent and darker green above: petiole 5–7 mm. long, slightly broadened at base: inflorescence corymbose-paniculate terminating the stem and short branches from the upper leaves: involucral scales narrowly ovate-acuminate, appressed-hirsute: heads 12 mm. high, 6–7 mm. wide: corolla 5 mm, long; tube pubescent; pales stramineous, acuminate, pubescent; akenes 5–6 mm. long, 1 mm. wide, slightly pubescent, more than the lower half attenuate into a stipe; pappus awns about 3 mm. long, subequal.

Collected on Ixtaccihuatl, Jan. 6, 1907. No. 1534.

Encelia resinosa. Frutescent, stems striate, viscid: leaves oblong-ovate, 5–7 cm. long, 1–1.5 cm. wide, acuminate, attenuate at base, sessile, entire, more or less viscid, pinnately veined, midnerve prominent and the numerous lateral veins obscure: heads 1.5 cm. wide without the rays, single terminating the leafy stems or with 2–3 additional ones from the axils of the upper leaves: scales of the involucre-linear-lanceolate, in 2–3 rows, very glutinous, 1 cm. long, rays 2 cm. long, bright yellow: chaff scarious with acuminate glutinous apex: corollas 7 mm. long: akenes appressed silky-hairy, deeply notched between the two stout awns.

Collected in mountains near Ixmiquilpan, Hidalgo, August, 1905. No. 1456.

Gochnatia Purpusi. A shrub with tomentose branches, the young growth densely white-tomentose: leaves ovate or ovate-lanceolate, entire, sessile, 2.5 cm. long, 4–12 mm. wide, white tomentose above becoming glabrate with age, densely white floculent-tomentose below: inflorescence in glomerules 3 cm. in diameter terminating the branches: heads nearly sessile, 15 mm. long, about 15-flowered: scales of the involucre in about 6 rows, flcculent, pubescent, ovate-acuminate, extending down to base of the pedicel; flowers twice longer than the involucre, ochroleucous; lobes of the corolla revolute, half the length of the 5-mm.-long tube; style branches about 1 mm. long, nearly truncate: akenes 3–4 mm. long, sparingly silky-hirsute.

This species differs from *G. hypoleuca*, in the arrangement of the inflorescence, its broader, nearly hemispherical, tomentose involucres, size and shape of the akenes. Collected on rocky slopes of mountains near Tehuacan, Puebla, June, 1905. No. 1164.

Pinaropappus spathulatus. Stems glabrous, weak, sparingly branched, several from a perennial root, leafy below, 10–15 cm. high: leaves thin in texture, spatulate, acuminate, entire or rarely slightly sinuate-dentate; blade 5–15 mm. long, 2–4 mm. wide, attenuate into a more or less winged petiole 2 cm. long: heads less than 1 cm. long, inclined to be nodding; rays 6–7 mm. long.

In appearance this species is very different from *P. roseus*. The specimens are young and bear no mature fruit. Collected near Orizaba. No. 1165.

PLANTS OF SINALOA.

BY T. S. BRANDEGEE.

Pectis repens. Perennial, the few stems prostrate spreading, sometimes rooting at the joints, slightly puberulent, 2–3 dm. long: leaves in opposite fascicles, 1–2 cm. long, 1–2 mm. wide, mucronate, serrate, long-setiferous below the middle, margins often revolute, 2–4 rows of small glands beneath: peduncles 1–3 terminal or from short, leafy branches, 10–12 cm. long, 4–5-bracteate: involucre 8 mm. long of 4–5 oval, obtuse, glandless scales that are slightly pubescent at the purple apex, finely striate, scarious-margined and keeled near the base: heads 20–30 flowered: rays 5, linear, 8 mm. long, purple on the outside and yellow within; ray-akenes 6 mm. long, pubescent with crisped hairs, their pappus of two awns abruptly dilated at base, as long as the akene and twenty shorter bristles of various lengths in 2–3 groups from the inner side: disk flowers 6 mm. long, bilabiate, one lobe separated nearly to the middle, the others united nearly to their tips; pappus about twenty bristles of different lengths, some longer than the akene, in 3–4 groups: akenes less pubescent than those of the ray.

An inconspicuous plant growing among grasses near Cofradia, Sinaloa.

Dyschoriste candida. Frutescent, branching from the base, puberulent throughout, 3 dm. high: leaves ovate, acuminate or obtuse, cuneate at base into a petiole about 5 mm. long, below sprinkled with resinous atoms, 3–5 cm. long, 2–2.5 cm. wide: flowers nearly sessile, 1–2 in the axils of the leaves; calyx parted nearly to the base into narrow, linear lobes, 1 cm. long; bractlets rudimentary: corolla 5–6 cm. long, white, wilting in the sunlight; the tube 3 cm. long and the rounded lobes spreading 4 cm.; stamens nearly equal, united at base in pairs; anthers sagittate, mucronulate at base; posterior lobe of the stigma ¼ as long as the anterior: capsule 1 cm. long, the stipitiform base very short; cells 2-seeded; seed pubescent with appressed hairs that become erect and mucilaginous when wetted.

Collected near Altata, Sinaloa.

Argithamnia discolor. Herbaceous, stems thickly covered with hairs, monœcious: leaves ovate-lanceolate, acuminate, nearly sessile, remotely denticulate, densely white-hairy beneath, green and nearly glabrous above, 6–8 cm. long, 2–2.5 cm. wide: racemes sessile in the axils, about 6-flowered, short and crowded: staminate flowers nearly sessile; bracts ovate-lanceolate, hirsute; sepals linear-lanceolate, hirsute, 5 mm. long, almost equalling the ovate-lanceolate petals that are hirsute on the back; stamens from the column in two verticels; glands with no free portion: pistillate flower nearly sessile; bract broad, short, striate, more or less lacerate; calyx segments 7 mm. long, broadly lanceolate, hirsute, with a prominent midnerve near their bases; petals linear-ovate, 4 mm. long, long-acuminate, ochroleucous, hirsute; glands short, quadrate, more or less laciniate; ovary densely hirsute; styles hirsute, connate half their length and bifid half the free portion; capsule 6 mm. wide, hirsute; seed nearly conical, recticulate-rugose.

Collected at Culiacan, 1904.

Argithamnia gracilis. Annual, slightly canescent with malpighiaceous hairs, monœcious, about 3 dm. high, sometimes with a few branches: leaves ovate-acuminate, cuneate at base, entire;

blade 8 cm. long and less, 3–4 cm. wide and less; petiole, 1–1.5 cm. long: racemes axillary, shorter than the petioles, 4–5 flowered: staminate flowers on pedicels 1 mm. long; bracts linear-lanceolate; sepals linear-lanceolate, 3 mm. long, equalling the ovate, acuminate petals; stamens from the column in two verticels; glands linear-acuminate: pistillate flower on a pedicel 2 mm. long; ovate-lanceolate, becoming 1 cm. long; petals small, 2 mm. long, denticulate, spatulate-acuminate, attenuate to the base; glands ⅓ as long; ovary densely hirsute; styles slightly united at base, bifid less than ½ their length, not dilated above: capsule 6–7 mm. wide, flattened, somewhat hirsute: seed grayish, apiculate, indistinctly angled, flattened at base and coarsely rugose-reticulate.

Collected near Culiacan, 1904.

Specimens of an *Argithamnia* with characters similar to those of *A. gracilis* were collected at the same locality. They represent a frutescent species, the petals are more hirsute on the back, and there are other slight variations. It may be a distinct species, but it is possible for a perennial to have annual forms.

Roulinia Sinaloensis. A twining vine; branches glabrous with a pubescent line above: leaves opposite, abruptly acuminate, deeply cordate, glabrous, lighter colored beneath, larger ones 10 cm. long, 6 cm. wide; petioles 3–5 cm. long: racemes usually shorter than the leaves, 3–7 flowered: buds ovate-acuminate; peduncles minutely pubescent in lines; pedicels 5–15 mm. long: calyx-segments linear-lanceolate, 5 mm. long: corolla segments ligulate, 8 mm. long, the edges incurved and the tip recurved: crown attached to the base of the column, parted into 5 3-lobed segments that are united 3 mm. at the base, the short lateral lobes not incurved and appearing to be winged margins of the gradually acuminate central one, which nearly equals the corolla lobes; the thickened margins of the central lobe are continued downward the length of the lateral lobes: anther tips oblong, rounded: stigma slightly 2-lobed, 5-rayed: pollinia oblong, on short narrow caudicles: mature follicles not seen.

Climbing over bushes in the vicinity of Culiacan and Yervacito, Sinaloa, Mexico.

March 5, 1908.

Gonolobus Altatensis. A twining vine, the stems pubescent and also hirsute: leaves broadly ovate, acuminate, a deep, narrow sinus at base nearly closed by the rounded basal lobes, sparingly hirsute on both faces, margin entire, 5–9 cm. long, 4–8 cm. wide; petioles hirsute, 3–5 cm. long: inflorescence in axillary subumbellate 2–5-flowered racemes; peduncles pubescent and hirsute, 4–6 cm. long; bracts linear-subulate, hirsute; pedicels 2–3 cm. long; buds orbicular, pubescent: calyx segments narrowly ovate-lanceolate, hirsute on the outer surface, glabrous within, reticulated, 4–5 mm. long, 2 mm. wide: corolla rotate, 18 mm. in diameter, reticulated, parted to the middle into 5 broad, rounded lobes: crown of 5 thick, fleshy, rounded, contiguous proceses attached to the corolla and base of the column reaching nearly to the anthers, bearing near the middle and base within 2 small hyaline scales that are joined to the column and have free tips; the processes are widened from the margins near the base outward and then inward nearly to the column horseshoe-like: stigma flat and radiate: anthers opening transversely, with rather prominent acute corneus wings, and white, scarious, deltoid or oblong tips 0.5 mm. long: fruit not seen.

Collected near Altata and Culiacan, Sinaloa.

NEW SPECIES OF MEXICAN PLANTS.

BY T. S. BRANDEGEE.

A few of these plants were found in Baja California the others are from the collections of Dr C. A. Purpus, made during the years 1906 and 1907, at Zacuapan, Vera Cruz, Esperanza and Boca del Monte, Puebla, and at San Luis Tultitlanpa, Southwestern Puebla, near the State of Oaxaca. The region about Zacuapan and Mirador has been visited by Galeotti, Sartorius, Liebman and other collectors, consequently the large collections of Dr. Purpus from this part of Mexico contain few undescribed forms. Most of the following species came from the unexplored region between Puebla and Oaxaca. The few plants not collected by Dr. Purpus have the collector's name mentioned, and

when Dr. Purpus was the collector, only the number of the plant in his distributed sets is noted. The types are all in the Herbarium of the University of California.

Apodanthes Mexicana. Plantulæ ovatæ primum cylindraceæ, 3 mm. longæ; bracteis sepalisque circa 12, inæqualibus, orbicularibus vel oblongis, minute erosis, fuscis; ovario fere infero; ovulis placentis parietalibus confluentibus undique insertis; baccæ vertice conico partem semniferam æquante; stigmate bilobato: flores masculi ignoti. Herbæ in cortice *Calliandræ grandifloræ* habitantes.

This species differs from *A. calliandræ* of Brazil in the position of the floral bracts about the "pseudocarpium" and the erose edges of all the bracts. The bracts or scales are adherent to the base of the ovary, but when the plant falls from its host a few of the lower bracts persist. Collected in Barranca de Tenampa, near Zacuapan. No. 2207.

Tradescantia monosperma. Caules ramosi plures pubescentes: foliis ovato-lanceolatis, 3–5 cm. longis, 1–1.5 cm. latis, carinatis aut planis; umbellis terminalibus, cum plurimis axillaribus, sessilibus paucifloris; pedicellis 4–6 mm. longis; sepalis navicularibus 5 mm. longis petalis purpurascentibus brevioribus; filamentis 5–6 basi pilis moniliformibus barbatis; antheris consimilibus, loculorum connectivo lato: ovario pubescenti 4 mm. longi, loculis 2–ovulatis; capsulæ loculis monospermis: seminibus oblongo-ellipsoideis, hilo lineari, embryostega dorsali rugis subradiantibus.

All the capsules examined have but one seed in each cell. The seed is elliptical in outline, flattened and excavated on the ventral side, with a linear salient ventral ridge, and is not unlike the seed of *Euphacelia*. In the arrangement of *Tradescantia* by C. B. Clarke it would come near *T. crassifolia*. Collected on rocks near San Luis Tultitlanpa, Puebla. No. 2755.

Talinum oligospermum. Caules ramosi 3–6 cm. alti ex radicibus tuberosis diametro 1–3 cm.: foliis planis oblongis obtusis, 1–2 mm. latis, 1–2 cm. longis: floribus cymosis ramos breves terminantibus vel pedunculis 1–2 cm. longis axillaribus; bracteis ovato-lanceolatis acuminatis; sepalis late ovatis cito deciduis;

petalis 5 roseis, 4 mm. longis; staminibus 5; stylis columnaris capsulæ æquilongis; capsulis ovoideis 1.5 mm. longis: seminibus 3–8 levibus, testa cinerea.

Collected on Cerro de la Yerba, Puebla; growing in dry, rocky soil. No. 2513.

Fendlerella Mexicana. Frutex ramosissimus cortice cinereo: folüs ovato-lanceolatis sessilibus, prope basim persistentem angustatis articulatis deinde deciduis, axillis densissime longe albo-sericeo pilosis, margine revolutis, 1 cm. longis, 2–3 mm. latis, basi connatis, supra pilis paucis basi pustulatis instructis, subtus albo-sericeo-pilosis: cymis compositis ramos terminantibus; pedicellis 3 mm. longis: calycibus turbinato-campanulatis, segmentis petalis spatulatis 4 mm. longis brevioribus; staminibus 10; stylis 2: capsulis juvenilibus calycis tubo medio adhærentibus: ovario 2-loculari; ovulo 1 pendulo.

The genus *Fendlerella* is not very distinct from *Whipplea* in floral and fruiting characters, but differs very much in habit and leaves. The leaves of *F. Utahensis*, like those of *F. Mexicana*, break away, leaving a base silky-hairy in the axils; this character is especially evident with *F. Mexicana*, for the leaves are soon deciduous, the nodes are only 3–4 mm. apart, and the long, white silky-hairs give a gray appearance to the otherwise naked branchlets. The base of some stems is 1 cm. thick. Collected on rocky slopes of Cerro de Baxtle, Puebla. No. 2588.

Rhynchosia prostrata. Caules prostrati ramosi pubescenti e radice valida 1–1.5 dm. longi: foliolis 3, orbiculatis mucronatis, basi cuneatis, pubescentibus, subtus punctis resinosis conspersis, diametro 1 cm ; petiolis 5–12 mm. longis: stipulis lineari-lanceolatis 3 mm. longis: floribus solitariis flavis 4–5 mm. longis; pedunculis axillaribus 1 cm. longis: calycis segmentis lineari-lanceolatis tubo æquilongis: leguminibus 18 mm. longis: seminibus 2 compresso-globosis.

The legume and seed are the same as those of *R. senna*, to which this species is closely related. Collected at Esperanza, Puebla. No. 2479.

Desmodium lunatum. Suffrutex volubilis, ramis teretibus elongatis fulvo-uncinato-hirsutis simul tomentosis; foliis trifolio-

latis; folioliis breviter petiolulatis membranaceis ovato-lanceolatis mucronatis 5–10 cm. longis, lateraliis multo minoribus, basi rotundatis utrinque dense molliterque strigillosis, marginibus nervisque fulvis; stipulis ovato-lanceolatis acutis striatis ciliatis 3 mm. longis valde deciduis; stipellis filiformibus 3 mm. longis; floribus 6 mm. longis purpureo-violaceis numerosissimis racemoso-paniculatis; racemis laxis; pedicellis circiter 5 mm. longis solitariis geminis vel interdum ternis; calycibus parce pilosis 4-partitis, lobis subæqualibus acuminatis; ovariis hirsutis; leguminibus stipitatis latisisisimis planis reticulato-venosis parce pilosis sæpe biarticulatis; articulis fere disjunctis suborbicularibus vel orbiculari-reniformibus, 2.5 cm. diametro, sinu seminali acutangulo, marginibus fulvo-ciliatis; stipitibus 6 mm. longis. Species haec *D. scutato* similis.

This proposed new species belongs to the subsection *Nephromeria*, and is much like *D. scutatum*. Collected in openings of forests near Zacuapan. No. 1907.

Æschynomene Purpusii. Frutex ramosissimus, cortice fusco, novellis albo-strigoso-hirsutis; foliis breviter petiolatis, 2 cm. longis; foliolis 7–8–jugis contiguis, supra glabris, subtus adpresso-pilosis, acuminatis, oblongis, costa marginali, basi auriculatis, 5–6 mm. longis, 2 mm. latis, jugis supremis minoribus fere semicirculatis; floribus 5–7 fasciculatis, 2 mm. longis; leguminum stipite flores æquantibus; articulis hirsutis 3–5 ellipticis; isthmis angustis suturæ semniferæ contiguis.

Collected near Zacuapan. This is a shrubby species, most resembling *Æ. compacta*. No. 1904.

Erythrina petræa. Frutex ramis pubescentibus parce aculeatis: foliis 5–9 cm. longis; petiolis pubescentibus 3–5 cm. longis sæpe aculeum gerentibus; foliolis late ovato-acuminatis, supra glabris subtus puberulis, basi cuneatis vel truncatis, 2–3 cm. longis, breviter petiolulatis: racemis circa 5 cm. longis versus apices paucifloris; pedicellis 3 mm. longis; calycibus subbilabiatis circa 1 cm. longis: vexillo obovato 3 cm. longo, 2.2 cm. lato; alis 7 mm. longis, obliquis acuminatis; carina retusa, 1.5 cm. longa. 1 cm. lata; staminibus vexillo brevioribus. Legumen ignotum.

Collected on Cerro de la Yerba, growing among rocks. No. 2680.

Mimosa Luisana. Frutex ramosus, ramis fuscis, aculeis compressis recurvatis atrorubescentibus 5 mm. longis armatis: stipulis 3.5 mm. longis lanceolatis: petiolis 5 mm. longis et rhachidibus foliorum 1–1.5 cm. longis inarmatis, tomentosis: pinnis 4–5 jugis: foliolis 4–5–jugis oblongo-ovatis acuminatis sessilibus pubescentibus basi obliquis, 4 mm. longis, 2 mm. latis: floribus spicatis; spicis circa 2 cm. longis, longe pedicellatis in racemis longis terminalibus dispositis; corolla 4 mm. longa extus sericeo-pubescente ad medium in dentes 5 secta: staminibus 10: leguminibus 3–4 cm. longis, 3–4 mm. latis, abrupte et longe acuminatis, curvatis, pubescentibus; seminibus 5–8; segmentis quadratis concavo-convexis; replo valido.

The specimens are fruiting with but few flowers remaining. The legumes and leaflets somewhat resemble those of *M. calcicola*, but the inflorescence is very different. Collected in arroyos near San Luis, Puebla. No. 2647.

Phaseolus striatus. Volubilis, caulibus parce pubescentibus: foliolis lateralibus obliquis, deltoideo-acuminatis mucronatis, 4–4.5 cm. longis, 2–2.5 cm. latis; foliolo terminali rhomboideo-acuminato; stipulis ovato-acuminatis striatis; stipellis lanceolatis striatis petiolis æquilongis: stipulis ovato-acuminatis: floribus 6–8 versus apicem pedunculi pubescentis racemosis; pedicellis 0.5–10 mm. longis; pedunculis foliis æquilongis vel superantibus; bracteolis fere glabris, late ellipsoideis, minute ciliatis, striatis 6 mm. longis calyce longioribus: calycis dentibus 2 superioribus connatis truncatis, inferioribus subæqualibus truncatis apiculatis: corollis purpurascentibus: legumine 6 cm. longo, 1 cm. lato, pubescente.

Collected on Cerro de la Yerba. No. 2678.

Bursera filicifolia. Arbor parva ramosa, cortice cinereo, ramulis striatis; foliis numerosis ramulos terminantibus, 2–4 cm. longis; foliolis 5–9–jugis, præsertim subtus tomentosis vel pubescentibus, sessilibus vel petiolulis parvis alatis, ovatis, basi cuneatis, crenatis, 5–10 mm. longis; alis inter foliolorum juga angus-

tis; petalis calyce duplo longioribus; pedunculis 1–2–floris, 2–5 cm. longis.

This small tree is mentioned in my lists of Cape Region plants under the name of *Bursera laxiflora*, which some forms of it resemble. The color of the bark easily distinguishes them, that of *B. laxiflora* being reddish, and that of *B. filicifolia* gray. The leaves of the form most closely approaching *B. laxiflora* differ from it in having more crowded, pubescent and smaller leaflets. An extreme form from La Paz has small leaves resembling fronds of *Cheilanthes tomentosa.* It is common throughout the Cape Region of Baja California.

Bursera Purpusii. Frutex ramulis cinereis glabris; foliis imparipinnatis utrinque viridibus, 2–3–jugis, 6 cm. longis, ad apicem ramulorum congestis, petiolo interdum angustissimo-alato; foliolis anguste ovatis vel spatulatis, obtusis basi cuneatis, usque 2.2 cm. longis, 8 mm. latis, inferioribus minoribus, fere sessilibus, nervis lateralibus paullum prominulis; drupis subglobosis brunneis solitariis; pedicellis deflexis, 2 mm. longis. Flores ignoti.

Collected at Zacuapan and described in the collector's notes as a small shrub growing on rocky slopes of barrancas. No. 2045.

Xanthoxylum peninsulare. Frutex ramosissimus 1 m. altus; cortice cinereo; ramis junioribus cinereo-pubescentibus; aculeis conicis fuscis 4 mm. longis: foliis 4–12 cm. longis pubescentibus imparipinnatis; foliolis 1–2–jugis petiolatis, late ovatis obtusis vel oblongo-acuminatis, 3–6 cm. longis, 1–5 cm. latis, margine leviter crenatis, coriaceis, pellucido-punctatis: paniculis terminalibus et axillaribus foliis brevioribus: floribus masculis 4–5–meris, pedicellis 2–3 mm. longis; carpellis maturis plerumque solitariis.

Collected in the Cape Region of Baja California, at San José del Cabo, San Bartolomé, Sierra de la Laguna by the writer, and at Las Animas. No. 270, Purpus.

Croton Coatepensis. Fruticosus ramosus, ramis juvenilibus pilosis: foliis ovato-acuminatis basi cuneatis, glanduloso-denticulatis, pagina inferiore densissime stellato-pilosa, superiore pubescente et viridiore; limbi foliorum 2.5–3.5 cm. longi, 1–1.5 cm.

lati; petioli pilosi 2.5 cm. longi; stipulis lineari-lanceolatis: racemis pilosis foliis longioribus, axillaribus et terminantibus circa 4 cm. longis, laxifloris, rhacidibus basi longe nudatis: floribus masculis circa 20, pedicellis 1 cm. longis; calycis laciniis 4, ovato-acuminatis extus pilosis, 2 mm. longis; petalis flabelliformibus unguiculatis, dense pilosis, 1.5 mm. longis; staminibus 4 exsertis; filamentis glabris; receptaculo glabro: floribus fœminiis circa 6; calycis laciniis 5, iis masculorum similibus; petalis lineari-lanceolatis, 1.5 mm. longis, pilosis; ovario piloso; stylis basi latis, bis divisis.

Collected among rocks on Cerro de Coatepe, Puebla. No. 2827.

Wissadula conferta. Fruticosa, dense stellato-tomentosa: foliis late ovatis, acuminatis crenatis cordatis, subtus dense albo-stellato-tomentosis, petiolo excluso 6–9 cm. longis, 5–8 cm. latis, supra viridioribus pubescentibus, basi 5–7–nervis; petiolis 4–6 cm. longis: floribus versus apicem viscosum caulis congestis: calycibus pubescentibus 1 cm. longis; lobis deltoideis brevibus; petalis aureis 12 mm. longis; columnis stamineis nullis: capsulis stellato-pubescentibus calycis lobis æquilongis; carpellis muticis: ovulis 3, duobus superioribus collateralibus: seminibus levibus.

Collected on rocky, sun-exposed slopes of Cerro de la Yerba, Puebla. No. 2602.

Pavonia Purpusii. Frutescens, ramis dense glanduloso-pubescentibus atque pilis hirsutis intermixtis; foliis ovatis longe acuminatis sæpe trilobatis, basi cordatis, dentato-serratis, subtus pubescentibus supra sericeis, 8 cm. longis, 5 cm. latis; petiolis glanduloso-pubescentibus, 4–6 cm. longis; floribus pedicellatis in axillis supremis solitariis; pedicellis 6–7 cm. longis sub apice articulatis; petalis cuneatis, 2 cm. longis, 1.4 cm. latis, flavo-violaceis; calycibus tomentosis, segmentis deltoideis trinerviis 1 cm. longis; bracteolis 10, linearibus glanduloso-hirsutis 1 cm. longis; capsulis depressis pubescentibus quinquelocularibus; loculis monospermis; seminibus subreniformibus rugosis.

Collected at Zacuapan. No. 1946.

Lopezia foliosa. Frutescens, 4–5 dm. alta, caulibus cum ramis intricatis ascendentibus vel prostratis et radicantibus,

tomentoso-hirsutis; foliis parce pubescentibus, alternatis numerosis lanceolatis, 1–2 cm. longis, 4–8 mm. latis, in petiolum 2–3 mm. longum angustatis; floribus in axillis solitariis vel ramos numerosos laterales terminantibus, pedicellis 1–2 cm. longis; petalis purpureis albo-marginatis, spatulatis 5 mm. longis; stamine petaloideo late obcordato fere albo; capsulis 3 mm. diametro ad apicem dehiscentibus.

Collected in Barranca de Tenampa, near Zacuapan. No. 2303.

Gaultheria angustifolia. Frutex ramis viscosis, foliosis; foliis coriaceis, breviter petiolatis anguste lanceolatis acuminatis, basi cuneatis, argute serratis, glaberrimis, utrinque reticulatis; racemis glanduloso-hirsutis, 6–10–floris, axillaribus vel terminalibus; pedicellis 5 mm. longis bracteas superantibus infra medium 2–bracteolatis: calycibus 5–partitis tomentosis: corollis urceolatis 7 mm. longis, lobis recurvis: staminibus 10; filamentis pilosis: antherarum loculis apice 2–aristatis. Capsulæ maturæ non suppetunt.

Collected on rocky slopes of Ixtaccihuatl, at 9–10,000 ft. altitude. No. 2040.

Asclepias Purpusii. Erecta puberula, foliis oppositis, breviter petiolatis, oblongis acuminatis membrenaceis, basi rotundatis vel cuneatis; umbellis interpetiolaribus pedunculatis, 5–10–floris, pedunculis 1.5–2 cm. longis; pedicellis 2 cm. longis; calycis segmentis ovato-lanceolatis; corollis ut videtur flavescentibus, lobis ovato-oblongis, 1 cm. longis; cucullis supra columnam 8 mm. longis antheris longioribus, apice rotundatis; ligulis longiuscule exsertis; antherarum alis triangularibus basi rotundatis. Folliculi ignoti.

The stems are 6 dm. and more long, the petioles about 1 cm. long. Collected at Zacuapan, where it is not common. No. 2099.

Gonolobus xanthotrichus. Herbaceus, ferrugineo-hirsutus pilis patentibus; foliis late oblanceolatis, longe acuminatis, basi rotundatis, 8.5 cm. longis, 3 cm. latis; pedunculis bifloris, 5 mm. longis; pedicellis 3–4 cm. longis; corollis atropurpureis rotatis, lobis ovato-lanceolatis extus hirsutis vix reticulatis; calycibus hirsutis, segmentis late ovato-lanceolatis; corona duplice, exteri-

ore annulare pilis vel squamis fimbriatis, interiore squamis quadratis carnosis; tubo stamineo 2 mm. longo; stigmate apice umbonato; polliniis fere horizontalibus. Folliculi ignoti.

Stems hirsute with long, spreading, bristly, fulvous hairs; leaves tawny-hirsute on both faces; petioles densely hirsute. Crown of ten fleshy, quadrate scales, about 1 mm. high, attached to the base of the column and on the outer side furnished with numerous, yellowish hairs or fimbriate appendages longer than the scales themselves and forming a conspicuous ring within the corolla. Collected at Zacuapan. No. 2097

Microdactylon, gen. nov. Calyx 5–partitus, basi intus 5–glandulosus. Corolla campanulato-subrotata, alte 5–fida, lobis latis contortis dextrorsum obtengentibus. Coronæ squamæ 5, tubo stamineo affixæ, erectæ, in ligulos 4–5 antheras superantas productæ. Stamina basi corollæ affixa, filamentis in tubum connatis; antheræ sub sinubus breves, subtransversim dehiscentes. Pollinia in quoque loculo solitaria, obovata, inter stigmatis angulos introrsum spectantia. Stigma vertice depressum. Frutex scandens affinis *Gonolobo* et *Microstelmæ*.

Microdactylon cordatum. Caules ramosissimi fruticosi, juvenilibus pubescentibus pilis intermixtis: foliis oppositis oblongo-ovatis acuminatis, basi profunde cordatis, utrinque pubescentibus, petiolo excludente 3–4 cm. longis, 2–2.3 cm. latis; petiolis 1.5–2 cm. longis: cymis 1–4–floris; pedunculis pubescentibus 2–3.5 cm. longis; pedicellis 1–2 cm. longis: calycis segmentis ovato-lanceolatis pubescentibus, 6 mm. longis: corollis atro-purpureis, tubo 3 mm. longo glabro, lobis 7 mm. longis, intus longe cinereo-pilosis. Folliculi ignoti

No species seems to have been described in the genus *Microstelma*. The specimens indicate a plant with stems at least 1 m. long. The ash-colored woody stems are 3–4 mm. in diameter, and the numerous short branches usually bear the cymes from the leaf axils. The flower differs from that of *Gonolobus* in the construction and attachment of the corona. The staminal column is 2–3 mm. long, and the laterally compressed scales of the corona are attached nearly its whole length; they are about 2 mm. wide at the fleshy-thickened top near the anthers, and then

are produced into 4–5 or more finger-like processes of unequal lengths, the longest being 3 mm. long. The minute anther wings are corneous. Collected on Cerro de Castillo, near Coatepec, Puebla, growing in rocky soil. No. 2836.

Asclepiodora insignis. Caules 3–4 dm. longi compressi glabri e radicibus tuberosis: foliis glabris oppositis oblongis obtusis vel retusis, apice abrupte acuminatis, basi cordatis, margine undulatis, sessilibus: umbellis caules terminantibus; pedunculis 2–4 cm. longis; pedicellis 1–2 cm. longis bifariam pubescentibus: calycis segmentis ovato-lanceolatis numquam reflexis, 6–8 mm. longis: corollis fere basi in lobos flavescenti-albidos ovato-oblongos, 1.5–1.8 cm. longos, albo-marginatos, apice obtusos curvato-mucronatos sectis: cucullis columnæ affixis, a latere complanatis, costa 1.5 mm. lata sæpe rubella, antheras multo superantibus, lamellis triangularis instructis, squamis parvis duobus alternantibus: antheris alis truncatis basi rotundatis. Folliculi ignoti.

This peculiar species resembles in some respects *A. Feayi*, a plant that has been considered an *Asclepias* by Gray, and an *Asclepiodora* by Chapman. The genus *Asclepiodora* is suppressed in Pflanzenfamilien by K. Schuman. This plant is certainly not an *Asclepias*, and also not a good *Asclepiodora*. The hoods alternate with two small scales, are solid below the middle, and the sides of the upper part are separated by a thin lamina attached to the midrib. The midrib has almost no thickness, but is wide, as if the sides of the hood were united to form it, and it is colored a reddish brown, making a striking contrast with the corolla. The anther wings are corneous, except at their rounded bases and the pollinia equal in length the caudicle. San Luis Tultitlanpa. No. 2624.

Nama spatulatum. Caules e radice lignosis 5–10 cm. altis, hirsutis foliosis: foliis spatulatis 2–3 cm. longis, 2–5 mm. latis utrinque hirsutis, basi angustatis, sessilibus acuminatis: floribus axillaribus pedicellis 4 mm. longis: calycis segmentis 9–10 mm. longis, lineari-lanceolatis, pubescenti-hirsutis: corollis calycibus duplo longioribus tubulato-infunduliformibus purpureis, lobis parvis: filamentis inferne bidentatis, basi corollæ adnatis margini-

bus liberis: stylis fere apicibus cohærentibus: capsulis oblongis calycibus brevioribus: seminibus numerosis globosis scrobiculatis.

This plant is related to the species having dentate filaments, but is peculiar in having united styles. Collected on Cerro de Baxtle, Puebla, growing in moist soil. No. 2584.

Nama flavescens. Suffruticosum, ramosum parce hirsutum flavo-glandulosum; caule erecto albo-pannoso; foliis angusto-linearibus, 1.5 cm. longis, margine revolutis, flavo-glandulosis; floribus ad apicem ramorum irregulariter cymosis; corolla infundibuliformi-campanulata violacea 2 cm. longa, sepalis sursum haud ampliatis paullo longiore; staminibus inæqualiter insertis; filamentis basi corollæ adnatis, marginibus liberis; seminibus subglobosis scrobiculatis.

The appearance of this species is like that of *N. stenophyllum*, differing in its yellowish green aspect. Collected near Parras, Coahuila. No. 1875.

Trichostema Purpusii. Frutescens puberulum, caulibus ramosis erectis 4–5 dm. longis: foliis ovato-acuminatis 2–3 cm. longis, 1–1.5 cm. latis, brevipetiolatis: cymarum pedunculis 1.5 cm. longis, 2–4–laxifloris; pedicellis 2–10 mm. longis: calycibus campanulatis 5 mm. altis, ad medium in dentes subæquales ovato-acuminatos sectis: corollis coccineis; tubis 1 cm. longis; lobis oblongis, 4 mm. latis, obtusis, inferioribus vix longioribus. staminibus corollis duplo longioribus: antherarum loculis confluentibus divaricatis.

The long stamens are spirally coiled in the bud. A fine species, with handsome, large, scarlet corollas. Its geographical habitat is aberrant, as well as the color of its flowers. Collected on Cerro de la Yerba, Puebla, growing in moist soil. No. 2259.

Hedeoma tenuiflora. Caules retrorsum pubescentes, 3–4 dm. longi e radicibus lignosis: foliis pubescentibus ovato-acuminatis, 1 cm. longis, 4–5 mm. latis basi in petiolum brevem cuneatis, margine revolutis: verticillastris sessilibus vel pedunculis 1–4 mm. longis, 1–4–floris: pedicellis 3–4 mm. longis pubescentibus: calycis tubo basi subgibbo; dentibus subulato-setaceis, inferioribus rectis superioribus recurvatis longioribus: corollis tubulatis purpurascentibus, 15 mm. longis calycibus triplo longi-

oribus, extus pubescentibus intus exannulatis, staminum rudimentis brevibus subulatis.

Collected at El Rancho Viejo, near the central part of Baja California, Apr. 30, 1889, by T. S. Brandegee. The long corolla is the only character this plant has suggesting *Poliomintha*, a genus Briquet in Pflanzenfamilien reduces to Hedeoma.

Salvia Zacuapanensis. Fruticulus caule glabro erecto ramoso purpureo 5 dm. longo; racemis solitariis, 2–6–verticillastris ramos terminantibus; foliis 4–6 cm. longis, ovato-acuminatis vel rhomboideo-acuminatis, basi cuneatis grosse crenato-dentatis subtus ad venas pilosis supra glabris; petiolis purpureis 2–3.5 cm. longis; verticillastris approximatis, bracteis reniformibus acuminatis purpurascentibus membranaceis pilis albidis longis ciliatis; calycibus 1.4 cm. longis purpurascentibus glabris membranaceis, lobis latis acutis parce ciliatis; corolla pubescente calycem paullo superante.

Flores omnino *S. saltuensis* sed planta glabrior foliis diversis.

This plant is closely related to *S. saltuensis*. The glabrous leaves are strikingly different in appearance; often the outline is sharply angled at the middle, and the long acuminate tip is not serrate. The verticils are not so crowded and the stems are more woody. Collected at Zacuapan, on moist slopes of the Barranca de Tenampa. No. 1932.

Salvia ramosa. Fruticosa ramosa; ramis brunneis superne albidis stellato-puberulis: foliis ovatis breviter crenatis basi truncatis vel cordatis, 18 mm. longis, 12 mm. latis, supra rugosis et parce pubescentibus, subtus dense stellato-pubescentibus; petiolis circiter 5 mm. longis albo-pubescentibus: verticellis 6–10 demum 1 cm. distantibus 4–10–floris, racemis 4–7 cm. longis ramos terminantibus: calyce pedicellis duplo longiore anguste tubulato-campanulato circa 4 mm. longo cum pilis ramosis tomentoso; corolla pallide cærulea tubo calycem æquante, galea 3 mm. longa breviter pilosa labio inferiore duplo longiore.

Related to *S. multiramea*. Collected on Cerro de Mazize, Puebla. No. 2578.

Salvia hamata. Suffrutex caulibus superne glanduloso-puberulis simul hispidulis cum pilis brevibus albis planis: foliis

glanduloso-punctatis ovatis crenatis apice obtusis basi cordatis truncatis vel cuneatis, 2–4 cm. longis, 1–2.5 cm. latis, petiolis 1.5–2 cm. longis; racemis 1–2 dm. longis: verticellis 2–4-floris inferioribus 5–6 cm. distantibus: bracteis late ovatis albo-ciliatis uncinato-aristatis deciduis; pedicellis 4 mm. longis: calyce tubulato-campanulato 12–14 mm. longo glanduloso et hirtello, dentibus acuminatis: corolla rubra 2.5 cm. longa; galea pilosa labio inferiore breviore: stylo glabro. *S. ancistrocarphæ* affinis.

This plant is near *S. ancistrocarpha*, from which it differs in having the base of the stem woody, smaller, thinner, long petioled leaves, and usually two-flowered verticels. The stems are often dark purple and the leaves sometimes have a purple margin.

Collected on Cerros de Coatepe and Santa Lucia. No. 2579.

Cestrum arborescens. Arbor parva, ramulis fuscis pubescentibus: foliis oblongo-ovatis basi cuneatis utrinque puberulis viridibusque, 8–13 cm. longis, 2–3 cm. latis; petiolis 2–2.5 mm. longis; gemmarum axillarum foliis axillisque densissime fulvo-tomentosis: racemis 3–10 cm. longis, 5–10–floris, plus minus tomentosis, ad nodos defoliatos lateralibus orientibus: calycibus tubulosis, 1–2 mm. longis, basi in stipites 6 mm. longos attenuatis pedicellis æquales: calycis laciniis inæqualibus lanceolatis circa 3 mm. longis intus pubescentibus: corollis 18 mm. longis; tubo tenui ad faucem 3 mm. lato ampliato: antheris explanatis orbicularibus: filamentis tertiæ parti superæ tubi insertis, geniculatis, obtuse dentatis, basi pubescentibus: baccis 1–4–spermis calycibus tectis.

A small tree growing in moist soil of barrancas, near San Luis Tultitlanpa, Puebla. No. 2715.

Maurandia Purpusii. Herba caulibus puberulis: foliis sagittatis 3–4 cm. longis, 4 cm. latis, acuminatis irregulariter et tenuiter dentatis vel integris: petiolis 1–2 cm. longis: floribus axillaribus solitariis circiter 5 cm. longis; pedunculis 4 cm. longis; calycis segmentis late ovatis acuminatis purpurascentibus, 15 mm. longis; corollis violaceis leviter obliquis: capsulis calycibus persistentibus brevioribus, polyspermis: seminibus subero-tuberculatis circumalatis; alis 2–3–fidis margine irregulariter sinuatis.

This *Maurandia* is near *M. erubescens*, differing in being more glabrous and having flowers much smaller, corollas half as wide and but slightly ampliated. The peduncles are usually longer than the leaves, which often have entire margins. Collected at San Luis, Puebla, growing among rocks in the mountains. No. 2567.

Pinguicula scopulorum. Glabra vel pilosiuscula; foliis rotundato-ovatis, obtusis vel acutis, 2–3 cm. longis; 1.5 cm. latis; scapis 8 cm. longis; corolla 1 cm. longa, lobis fere æqualibus integris, 3–4 mm. longis, purpurascentibus, tubo flavo; calcare circa 3 mm. longo, flavo, obtuso.

This plant differs from *P. lilacina* as described in several particulars, but chiefly in not having black-punctate leaves. Collected at Zacuapan on moist rocks.

Randia megacarpa. Frutex 2 m. altus cortice cinereo; ramis brevibus ad apices spinas 4–nas 12 mm. longas gerentibus: foliis obovatis, obtusis vel acuminatis, 2–3 cm. longis, 1–1.5 cm. latis, basi cuneatis, fasciculatis, utrinque tomentosis: bacca sessili globosa, 3 cm. in diametro, fere glabra. Flores ignoti.

This probably is the same plant as that of the Xantus collection mentioned by Dr. Gray as *Randia armata* DC.? It is known as "papache" by the people of the country, a name applied also to *R. Thurberi* and to *Genipa echinocarpa* in Sinaloa. *R. obcordata* is sometimes called "pimiento" in Baja California. In the mature fruit the aglutinated mass of seeds is free and can be rattled about, nothing of the placentas remaining. A bush in cultivation at San Diego, Cal., although luxuriant, has not blossomed, and until flowers have been examined, there must remain a slight doubt concerning the genus. The type was collected at Comondu, Baja California, Feb. 2, 1889, by T. S. Brandegee.

Randia albonervia Frutex cortice cinereo, ramulis sepius ad apices 2–3 spinas gerentibus: foliis ovatis vel obovatis, acuminatis, basi cuneatis in petiolum brevem attenuatis, utrinque dense pubescentibus, subtus ad venis albo-pubescentibus, 2–5 cm. longis, 1–2 5 cm. latis: floribus solitariis ramulos terminantibus; corollæ tubo albo-pubescente, 4 cm. longo, sensim 4 mm. lato ampliato, limbi lobis 2 cm. longis, lanceolatis, acuminatis; alabastris pubes-

centibus antheris 6 mm. longis in fauce fere sessilibus: stigmate 2-fido: calycis lobis anguste lanceolatis, inæqualibus, 1 cm. longis, tubo longioribus. Fructus ignotus.

Collected at Corral de las Piedras, near Zacuapan. No. 2424.

Perezia tomentosa. Caules arachnoideo-tomentosi basi fusco-lanati 2-4 dm. alti: foliis imbricatis ovatis acuminatis sessilibus argute dentatis, subtus dense albido-tomentosis, supra arachnoideo-tomentosis, 2.5–5 cm. longis, 1.5-2.3 cm. latis: capite diametro 3 cm. caules vel ramulos pauces breves terminanti vel inter folios superiores sessili: involucri squamis 2–3–seriatis, exterioribus tomentosis lineari-lanceolatis acuminatis 1–1.5 cm. longis: floribus numerosis purpureis: achæniis resinoso-papillosis.

The stems are very leafy, especially above the middle, and the whole plant is white, with the more or less deciduous tomentum. Although this conspicuous plant grows in a region visited by many collectors, it does not seem to have been described. Collected at Esperanza, Puebla. No. 2632.

Hymenatherum aurantiacum. Caules e radice lignosi, 15 cm. alti: foliis alternis pinnati-partitis, lobis 4-6 linearibus: capitulis pedunculos 1–1.5 cm. longos terminantibus: involucris turbinatis 5 mm. altis, bracteis connatis 9-14 basi nudatis: ligulis 6 aureis 4 mm. longis: achæniis parce villosis: pappi paleis 8-10 ovato-lanceolatis achæniis brevioribus, apice in setas 3-5 inæquales sectis, seta centrali multo longiori: receptaculo conico.

Collected on Cerro de Santa Lucia, Puebla. No. 2532.

Calea rupestris. Fruticosa fere glabra ramis fuscis striatis: foliis ovato-acuminatis basi cuneatis penninerviis calloso-denticulatis supra lucidis viridioribus, 4-6 cm. longis, 2-2.5 cm. latis: petiolis 5-15 mm. longis: capitulis 20-30, corymbosis ramos terminantibus, pedunculis 2-4 cm. longis, ligulis 7-10 flavis 4 mm. longis; disci floribus circa 25: involucri campanulati squamis 4-5-seriatis ovato-oblongis striatis obtusis exterioribus gradatim brevioribus: pedicellis 2-3 cm. longis parce pubescentibus bracteolis lineari-lanceolatis instructis: receptaculo conico: paleis oblongis obtusis: achæniis 3 mm. longis 5 angulatis: pappi squamis 7-10 lineari-lanceolatis interdum inæqualibus achæniis brevioribus.

The plant has a tendency to blacken while drying. The pappus scales are often of unequal length, and the ribs of the akenes are ciliate. Collected at Boca del Monte and Esperanza, Puebla. No. 2464.

Encelia maculata. Frutescens, ramis striatis glabris fuscis: foliis oppositis deltoideo-lanceolatis in petiolum alatum abrupte attenuatis, irregulariter crenato-dentatis, 6-12 cm. longis, 3-5 cm. latis, supra scabris, subtus tenuiter pubescentibus; petiolis 2-3 cm. longis usque ad medium late marginatis ciliato-pubescentibus: capitulis corymbosis, pedunculis aut ex axillis superioribus aut ramulos terminantibus: pedicellis 0.5-10 mm. longis albo-tomentosis: involucri squamis ovato-lanceolatis tomentosis: ligulis circiter 8 oblongo-lanceolatis 1 cm. longis: disci floribus numerosis; achæniis præsertim ad margines longe villosis: paleis cum aristis 3-4 mm. longis, paleis intermediis 2–4 inæqualibus laciniatis ovatis vel oblongis circiter 1 mm. longis: capitulo diametro 1-2 cm.

The upper surface of the leaves finally becomes glabrous and has a spotted appearance, for the very short bristles are deciduous, leaving their disk-like bases. This species is nearly related to *E. Pringlei*, but seems to be distinct. Collected at San Luis Tultitlanpa, Puebla. No. 2520.

Verbesina Luisana. Fruticulus cortice cinereo ramis junioribus tomentosis: foliis oppositis ovato-acuminatis basi in petiolum anguste alatum attenuatis serratis, supra scabrido-hirsutis cum pilis basi pustulatis, subtus tomentosis, 6-7 cm. longis, 2-2.5 cm. latis: petiolis 1 cm. longis, alis interdum subereis et decurrentibus: capitulis 4–6 circiter 1 cm. longis ramos terminantibus vel ex axillis superioribus pedunculis 2–4 cm. longis; pedicellis 6 mm. longis: involucri squamis exterioribus ovatis brevibus, interioribus oblongo-acuminatis angustis: ligulis circa 2 flavis parvis; antheris fere atris: achæniis anguste alatis parce pubescentibus 4–5 mm. longis aristis validis longioribus; paleis flavis acuminatis conduplicatis aristas superantibus.

The narrowly winged petioles are sometimes indistinctly auriculate at base and tend to become connate. Collected at San Luis Tultitlanpa, Puebla. No. 2523.

April 20, 1908.

Verbesina Purpusii. Acaulis herbacea, foliis radicalibus 4–8 ovatis vel obovatis obtusis sessilibus crenatis basi attenuatis, adpresse pilosis, nervis venisque subtus prominentibus, 3–4 cm. longis, 1.5–2 cm. latis; scapis monocephalis 2–3 dm. altis: capitibus diametro 2.5 cm., ligulis flavis 1 cm. longis: involucri squamis lineari-lanceolatis pubescentibus: paleis acuminatis versus ad apicem flavescentibus: achæniis 3.5 mm. longis late alatis basi angustatis; pappi aristiis nullis, una, vel duabus, altera hamata altera longiore recta 1.5 mm. longa.

Collected at Boca del Monte, Puebla, growing in meadows. No. 2629.

Viguiera similis. Suffruticosa, caulibus parce tomentosis, 1 m. altis; foliis oppositis, cordatis, longe-acuminatis, argute serratis, utrinque tomentosis, subtus incanis, usque 12 cm. longis, 8 cm. latis; petiolis 1–2 cm. longis albo-tomentosis; capitulis paucis caules terminantibus; pedunculis 3–7 cm. longis; squamis involucri discum subæquantibus, 1–1.5 cm. longis, lanceolatis, incanis; ligulis 2–2.5 cm. longis, 5 mm. latis, acuminatis; achæniis fere glabris, aristas deciduas 2 mm. longas gerentibus, squamellis intermediis sæpe deficientibus.

This species is common about the summits of the high mountains of the Cape Region of Baja California. It is near *V. tomentosa*, and has been considered the same in notes concerning Lower California flora. Both species were in cultivation at San Diego, where *V. tomentosa* grew more luxuriantly than in the Cape Region. The proposed new species differs from its associate in its virgate habit, larger, deeply serrate leaves, larger flowers, glabrous akenes and pappus. Many of the akenes are flattened, and when bearing only two awns resemble those of Encelia. *V. tomentosa* is an intricately branched shrub 5–10 ft. high, common throughout lower elevations of the Cape Region.

Perymenium angustifolium. Frutex cortice fusco-brunneis, ramulis juvenilibus adpresse strigosis: foliis oblongo-lanceolatis in petiolum brevem attenuatis, supra basim 3–nerviis, margine integris vel obtuso-serratis, supra scabro-strigosis, subtus pallidioribus hispidulo-hirsutis, 3–5 cm. longis, 5 mm. latis: capitulis 2–5 corymbosis; pedicellis filiformibus 1–2.5 cm. longis adpresse

pubescentibus: involucri squamis 2–3–seriatis adpresse strigosis ciliatis, exterioribus ovatis, interioribus ovato-acuminatis apicibus herbaceis disco superantibus: ligulis involucro paullum longioribus; disci floribus circiter 8; paleis conduplicatis acuminatis flavescentibus: achæniis disci atro-brunueis crassiusculis: pappi aristis circiter 10 inæqualibus 2–3.5 mm. longis.

From the description this species seems to be near *P. chalarolepis.* Collected on Cerro San Luis, Puebla. No. 2518.

Perymenium glandulosum. Frutex parvus ramis junioribus foliisque glandulosis: foliis ovato-lanceolatis basi cuneatis margine revolutis, supra scabris, subtus scabro-hirsutis, 2–2.5 cm. longis, 6–9 mm. latis; petiolis 2 mm. longis: capitulis ramulos terminantibus vel ex axillis superioribus orientibus; pedicellis 1 cm. longis: involucri squamis circiter 2–3–seriatis scabris, exterioribus ovato-acuminatis 3–4 mm longis, interioribus longe acuminatis 5–6 mm. longis apice patentibus: ligulis 5–6, 5 mm. longis, aureis; disci floribus circiter 20; paleis angustis achæniis fere duplo longioribus; pappi aristis circiter 10 inæqualibus 1–3 mm. longis.

The leaves, involucres and young branches are very glandular. Collected in Barranca de Tlacuilosto, Puebla. No. 2525.

Perymenium ovatum. Frutex parvus ramulis pubescentibus: foliis late ovatis obtusis apiculatis serratis, supra parce pubescentibus rugosis, subtus pallidioribus pubescentibus, 1.5 cm. latis, 3 cm. longis; petiolis 5 mm. longis: capitulis paucis ramulos terminantibus vel in axillis superioribus solitariis, hemisphæricis diametro 1 cm. ligulis excludentibus: pedicellis 0.5–2.5 cm. longis: involucri squamis circiter 2–seriatis ciliatis, exterioribus pubescentibus ovatis 4–5 mm. longis, interioribus ovato-acuminatis: ligulis circiter 10 oblongis 4 mm. latis, 13 mm. longis, aureis: disci floribus circiter 20: paleis conduplicatis anguste lanceolatis achæniis duplo longioribus: pappi aristis circiter 15 inæqualibus 1–3 mm. longis: antheris fuscis.

The branches are terminated by three heads, the pedicel of the central one being much the shortest and sometimes bracteate with two small leaves, so as to appear sessile. The solitary pedicels from the axils of the upper leaves are much longer than the

terminal ones. The characters of this plant are near some of those of the description of *P. croceum*. Collected in Barranca de Tlaquilosto, Puebla. No. 2527.

Melampodium parvulum. Annuum caule erecto parce ramoso superne oligophyllo, pubescenti: foliis ovatis obtusis, in petiolum alatum cuneatis, basi connatis et auriculatis, 3–4 cm. longis, 1.5–2 cm. latis, tenuis leviter pubescentibus penniveniis: capitulis paucis, pedunculis axillaribus 3–6 mm. longis; involucri bracteis exterioribus 5 ovato-acuminatis basi connatis 4 mm. longis; ligulis 3–4, flavis 1 mm. lougis auriculiformibus extus pubescentibus: squamis interioribus achænia involventibus apice conico-acuminatis, margine irregulariter alatis vel tuberculatis: achæniis levibus basi hamatis.

The wings, tubercles and awns of the mature fruit are variable. The inflorescence of the dried specimens is hidden by the comparatively large leaves, which resemble those of *M. perfoliatum*. Collected on Cerro Santa Lucia, Puebla, growing in shaded soil. No. 2813.

Barroetea glutinosa. Annua parum ramosa undique dense glandulosa 1–2 dm. alta: foliis (cum petiolo 5–10 mm. longo) 2–3 cm. longis, alternis late ovatis acuminatis dentatis basi cordatis vel cuneatis, 1–1.2 cm. latis: capitulis 1 cm. altis; pedunculis 1–4 cm. longis: involucri bracteis lineari-oblongis striatis purpurascentibus 6 mm. longis exterioribus brevioribus: styli ramis superne ovato-dilatatis: achæniis compressis, uno latere 1–altero 1–2–nervato: pappi setis achæniis brevioribus.

This is a very distinct species, differing from the others of the genus in having alternate leaves and being glandular. The basal callus of the akene is not large, and the style branches of the young flowers are conspicuously enlarged so as to appear ovate. The corollas are campanulate rather than tubular. Collected on Cerros, near San Luis Tultitlanpa, Puebla. No. 2625.

ERRATA

Page 246, line 1, for columnaris read columnaribus.
Page 246, line 25, for pubescenti read pubescentes.
Page 252, line 14, for ligulos read ligulas.
Page 252, line 19, for *Microstelmæ* read *Microstelmati*.
Page 258, line 18, for lignosi read lignosa.

STUDIES ON CALIFORNIAN PLANTS. II.*

BY H. M. HALL.

CRYPSIS ACULEATA Ait. Alkali soil near Norman, Glen Co., May, 1898, *J. Burtt Davy;* near Stockton, Oct. 2, 1907, *Mrs. Brandegee*, determined by Prof. A. S. Hitchcock. Mrs. Brandegee reports it as very abundant over considerable areas, especially on low lands which had been overflowed. Mr. Davy's specimens are only 1 to 2 cm. broad and high; those gathered by Mrs. Brandegee are larger, a single plant often forming a dense mat 3 dm. or more in diameter. This large size is apparently attained only by summer and autumnal plants.

SISYRINCHIUM ELMERI Greene. Along rivulets on the south slope of Sugarloaf Peak, San Bernardino Mts., in the Transition Zone, *Hall*, No. 7536. Larger than the type and with longer pedicels, thus approaching the form described as *Hydastylus longipes* Bicknell.

CHLOROGALUM ANGUSTIFOLIUM Kell. In firm, red, clay soil, just east of Redding, *Hall & Babcock*, No. 4003. On a day when the thermometer registered 48°C, the flowers opened at sundown. Perianth segments oblong, obtuse, commonly tipped by a minute incurved mucro, which is a continuation of the single medial nerve; segments otherwise clear white and destitute of veins.

HASTINGSIA ALBA Wats. Rather frequent in the northern Sierra Nevada and Coast Range Mts., extending northwest to Marble Mt., Siskiyou Co., *Chandler*, No. 1616, and northeast to Deadhorse Cañon, in the same county, *M. S. Baker*. It grows in sandy places along the Sacramento River, at about 450 m. alt., whence the following field notes: perianth truncate at base, slightly saccate by the two shallow depressions in the base of each segment; segments narrowed in the middle and keeled or folded around the flat filaments, the tips broader and somewhat concave above, white with greenish midnerve, glabrous.

TRILLIUM OVATUM Pursh. Head of the McCloud River, in Siskiyou Co., alt. 1500 m., *Hall & Babcock*, No. 4134.

SALIX GLAUCA VILLOSA Anders. At the lower edge of the Alpine Zone, Dollar Lake, San Bernardino Mts., alt. 2770 m. Forming

*The first number under this title appeared in the Botanical Gazette, xxxi. 388 (1901).

thickets 4 to 10 ft. high around the head of the lake, in some cases entirely covered by snow, save for the protruding stems, these with flower-buds on Aug. 5, 1906. Neighboring plants, not covered by snow, were in full leaf on the same date.

ARENARIA SAXOSA Gray. South Fork Meadows, alt. 2450 m., San Bernardino Mts., *Hall*, No. 7673. But one plant was found, a loosely branching specimen 3 dm. high, very much like the common form in New Mexico and Arizona.

SCLERANTHUS ANNUUS L. Occurs as an introduced plant in the Sierra Nevada foothills; along the railroad above Placerville, May, 1907, *Mrs. Brandegee.*

CORYDALIS CASEANA Gray. Vicinity of Morgan, northern Tehama Co. The plants vary in size from a few cm., when growing in exposed places, to 12 dm. in very moist soil shaded by pine trees. Flowers white, except for a rosy tinge to spur and anthers.

SISYMBRIUM CUMINGIANUM F. & M. Very common on San Jacinto Mt. Previously reported by myself as *S. canescens*, another widely distributed species plentiful at lower altitudes in Southern California.

SPIRAEA DOUGLASII Hook. This Coast Range plant is plentiful along streams in Morgan Springs Valley in the Sierra Nevada of Tehama Co., *Hall & Babcock*, No. 4407, and also comes from Modoc Co., *M. S. Baker.*

AESCULUS CALIFORNICA (Spach.) Nutt. This is to be added to the flora of Southern California, since it grows on the north slope of Tejon Pass, Los Angeles Co. It is plentiful near Fort Tejon, just over the line in Kern Co.

PHACELIA RACEMOSA T. S. Brandegee, Zoe ii. 252 (1891). *Nama racemosa* Kell., Proc. Calif. Acad. v. 51 (1873). *Phacelia namatoides* Gray, Proc. Amer. Acad. x. 317 (1875). In the original description Dr. Kellogg describes the second internode as "enlarging above, ancipitally expanded at the base of the leaves or compressed, and with the branches decurrent winged." This is an abnormality, as is plainly evident from a specimen, presumably of the type collection, preserved in the Brandegee Herbarium.

PHACELIA HUMILIS T. & G. This species is described as being diffusely branched from the base and with the leaves all alternate. Specimens from Lassen Co., *Baker & Nutting*, are diffusely branched but have the lower leaves opposite. Specimens from Marlette Peak, Washoe Co., Nevada, *Hall & Chandler*, No. 4577, vary from the type form in being strict, nearly simple-stemmed, and in their opposite lower leaves. This form comes also from Lassen Creek, Modoc Co., California, *Mrs. Austin*. But in all its forms *P. humilis* may be distinguished from *P. racemosa* and *P. Pringlei*, the only other species with opposite leaves, by the hirsute pubescence, larger flowers, and exserted stamens.

ERIODICTYON LOBBII (Gray) Greene, Bull. Calif. Acad. i. 202 (1885). This species ranges farther north and east than has been generally supposed, and is to be expected in the arid Transition Zone almost anywhere in the northern Sierra Nevada. It has been collected at the south base of Mt. Shasta, at Sardine Lake, Sierra Co., in the lava beds of Modoc Co., and in Nevada (Washoe Co.). The leaves are of two sorts, the lower and the fascicled ones being dull green and glandular above, loosely tomentose beneath, strongly revolute, at times so much so as to seem almost cylindric, while the upper ones are white-tomentose on both sides, plane, and 4 to 12 mm. broad.

CALAMINTHA MIMULOIDES Benth. Bear Cañon, San Gabriel Mts., Los Angeles Co., June, 1897, *J. H. Barber*, No. 216, in the same district as Acton, where it has been collected by Dr. Hasse.* Herbaceous throughout, 5 dm. high: leaves 3.5 to 4.5 cm. long by 3 to 4 cm. broad, on petioles 1 to 1.5 cm. long: longest pedicels 4 cm. long: calyx-tube 13 mm., the teeth 4 mm. long.

MARTYNIA PROBOSCIDEA Glox. Occurs as a waif at Keene Station, Kern Co., Sept., 1904, *T. D. Woolsey;* also found at Palo Verde, Riverside Co., on lowlands near the Colorado River, 1905, *Lou Wiley*, but in fruit only, and determination, therefore, not certain.

ERIGERON COMPOSITUS Pursh. Summit of Mt. San Gorgonio, June 26, 1904, *Mrs. C. M. Wilder*. The plants are low and compact, as in the var. *discoideus*, with which they grow; the rays evident but short and apparently pale.

*Acc. to Miss Eastwood, Zoe iv. 287 (1893).

HAPLOPAPPUS ACAULIS (Nutt) Gray. The achenes are commonly described as "canescently villous" (Gray, Syn. Fl.), or as "silky-pubescent" (Gray, Bot. Calif.), but there is considerable variation in this character. Plants from Mt. Tallac (*Hall & Chandler*, No. 4612) exhibit two forms, the one with silky-pubescent achenes, the other with perfectly glabrous achenes, while in certain heads the achenes are glabrous, save for a few scattered hairs near the summit. The different forms grow together among rocks in the Hudsonian Zone. Pyramid Peak specimens (*Hall & Chandler*, No. 4734) have mostly glabrous achenes, but in a few cases the whole surface of the achene is covered with a villous pubescence, which approaches the silky character of the typical form. The following collections have only glabrous achenes: near Susanville, Calif., *Brandegee;* Washoe Co., Nevada, *O. F. Heizer;* Steins Mts., Ore., *Cusick*, No. 1966; Warner Mts., Ore., *Mrs. C. C. Bruce*, No. 2135. All of the Rocky Mt. collections at hand, as well as a majority of the Californian collections, exhibit only pubescent achenes.

SENECIO TRIANGULARIS Hook. According to Prof. Greene, all of the Californian forms should be received into his *S. trigonophyllus*. This species is supposed to have more finely serrate and shorter leaves, a more branched inflorescence and smaller heads than in typical *S. triangularis* of the Rocky Mts. But the leaves are often more coarsely serrate than in many Rocky Mt. plants, and while generally shorter, they are sometimes of the largest, even 15 cm. long, exclusive of petiole. The inflorescence in the Rocky Mt. form is frequently compound, while in ours it is sometimes simple; and the involucre measures 8 to 10 mm. high, as against 6 to 8 mm. in Californian plants. If there is a difference in leaf-texture, I am unable to detect it in dried specimens. But according to field observations, this character varies considerably in a given locality, being largely dependent upon degree of exposure. The form which Professor Greene probably had in hand while describing *S. trigonophyllus* is plentiful in the Lake Tahoe district, in shaded places, but since it grades by all its characters into typical *S. triangularis*, which is also common in the Californian Sierra, it cannot be specifically separated, either on morphologic or geographic grounds.

RHAGADIOLUS HEDYPNOIS All. Collected on a vacant lot in the southern part of Los Angeles, May 14, 1905, *T. W. Minthorn*. This weed of the Mediterranean region bids fair to become common in California, having been previously reported from such widely separated stations as Sonoma Co., Mariposa Co., and San Diego.